OIPE JC1800 OCT 2 8 2002 PATENT & TRADEMARK OFFICE

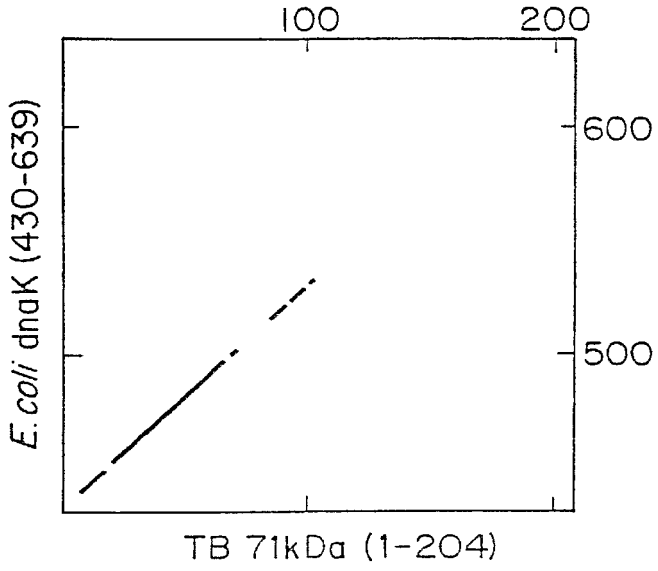

Fig. 1A

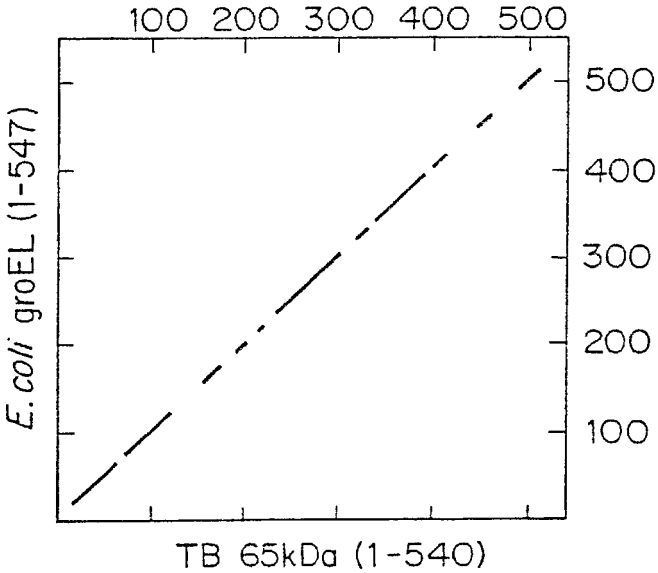

Fig. 1B

OIPE JC190 OCT 28 2002 PATENT & TRADEMARK OFFICE


```
                1         10        20        30        40        50        60        70
                '         '         '         '         '         '         '         '
HUMP1           MLRLPTVFRQMRPVSRVLAPHLTRAYAKDVKFGADARALMLQGVDLLADAVAVTMGPKGRTVIIEQSWGS
                                    :  ::::::: :::  :: ::  ::::: :: :::::  :   : :
GROEL           ----------------------MA----------AKDVKFGNDARVKMLRGVNVLADAVKVTLGPKGRNVVLDKSFGA

                   71        80        90       100       110       120       130       140
                   '         '         '         '         '         '         '         '
HUMP1              PKVTKDGVTVAKSIDLKDKYKNIGAKLVQDVANNTNEEAGDGTTTATVLARSIAKEGFEKISKGANPVEI
                   :  :::::  :: :  :  :: :  ::  :  :::::::::::::  :  ::      : ::
GROEL              PTITKDGVSVAREIEPEDKFENMGAQMVKEVASKANDAAGDGTTTATVLAQAIITEGLKAVAAGMNPMDL

                  141       150       160       170       180       190       200       210
                  '         '         '         '         '         '         '         '
HUMP1             RRGVMLAVDAVIAELKKQSKPVTTPEEIAQVATISANGDKEIGNIISDAMKKVGRKGVITVKDGKTLNDE
                    ::  :  :   :::  : :     :::: :::::  :   :  :: :::  ::::: ::  : ::
GROEL             KRGIDKAVTAAVEELKALSVPCSDSKAIAQVGTISANSDETVGKLIAEAMDKVGKEGVITVEDGTGLQDE

                  211       220       230       240       250       260       270       280
                  '         '         '         '         '         '         '         '
HUMP1             LEIIEGMKFDRGYISPYFINTSKGQKCEFQDAYVLLSEKKISSIQSIVPALEIANAHRKPLVIIAEDVDG
                  :  ::: ::::: ::::::      :        ::  :::: :    : ::      ::: :::::: :
GROEL             LDVVEGMQFDRGYLSPYFINKPETGAVELESPFILLADKKISNIREMLPVLEAVAKAGKPLLIIAEDVEG

                  281       290       300       310       320       330       340       350
                  '         '         '         '         '         '         '         '
HUMP1             EALSTLVLNRLKVGLQVVAVKAPGFGDNRKNQLKDMAIATGGAVFGEEGLTLNLEDVQPHDLGKVGEVIV
                  ::: : : :     : ::::::::: ::  : : :  ::: :    ::      :::  :
GROEL             EALATAVVNTIRGIVKVAAVKAPGFGDRRKAMLQDIATLTGGTVISEE-IGMELEKATLEDLGQAKRVVI

                  351       360       370       380       390       400       410       420
                  '         '         '         '         '         '         '         '
HUMP1             TKDDAMLLKGKGDKAQIEKRIQEIIEQLDVTTSEYEKEKLNERLAKLSDGVAVLKVGGTSDVEVNEKKDR
                  ::     : :  : :  :  :  :  :: :  ::: :: :::  :::: :::     :: ::: :
GROEL             NKDTTIIDGVGEEAAIQGRVAQIRQQIEEATSDYDREKLQERVAKLAGGVAVIKVGAATEVEMKEKKAR
```

Figure 2A

OIPE JC1 90
OCT 2 8 2002
PATENT & TRADEMARK OFFICE


```
          421       430       440       450       460       470       480       490
          '         '         '         '         '         '         '         '
HUMP1     VTDALNATRAAVEEGIVLGGGCALLRCIPALDSLTPANEDQKIGIEIIKRTLKIPAMTIAKNAGVEGSLI
          : ::: ::::::::::: : ::: :: : :  : :  ::::          :   :  : : : : :
GROEL     VEDALHATRAAVEEGVVAGGGVALIRVASKLADLRGQNEDQNVGIKVALRAMEAPLRQIVLNCGEEPSVV

          491       500       510       520       530       540       550       560
          '         '         '         '         '         '         '         '
HUMP1     VEKIMQSSSEVGYDAMAGDFVNMVEKGIIDPTKVVRTALLDAAGVASLLTTAEVVVTEIPKEEKDPGMGA
                    :: :      ::  :: ::::: : ::  :: :: :  : :  ::  ::      ::
GROEL     ANTVKGGDGNYGYNAATEEYGNMIDMGILDPTKVTRSALQYAASVAGLMITTECMVTDLPKND-AADLGA

          561       570
          '         '
HUMP1     MGGMGG--GMGGGMF
            :::::   :::: :
GROEL     AGGMGGGMGGGMGGMM-

Total score = 4667, 5 breaks
  276 identities out of 545 possible matches between residues

25 random runs
Alignment score =   65.34 SD   Standard deviation =   18.94   Mean = 3429.48
```

Figure 2B

OCT 2 8 2002 '02
PATENT & TRADEMARK OFFICE


```
                1         10        20        30        40        50        60        70
                '         '         '         '         '         '         '         '
HUMP1   MLRLPTVFRQMRPVSRVLAPHLTRAYAKDVKFGADARALMLQGVDLLADAVAVTMGPKGRTVIIEQSWGS
                :                   ::          :   ::::: ::  ::::: :  : ::
ML65K   M-----------------------------AKTIAYDEEARRGLERGLNSLADAVKVTLGPKGRNVVLEKKWGA

               71        80        90       100       110       120       130       140
                '         '         '         '         '         '         '         '
HUMP1   PKVTKDGVTVAKSIDLKDKYKNIGAKLVQDVANNTNEEAGDGTTTATVLARSIAKEGFEKISKGANPVEI
        :  : :::  :: : : :  ::: ::  :  :::::::::::::::  :::      :::::
ML65K   PTITNDGVSIAKEIELEDPYEKIGAELVKEVAKKTDDVAGDGTTTATVLAQALVKEGLRNVAAGANPLGL

              141       150       160       170       180       190       200       210
                '         '         '         '         '         '         '         '
HUMP1   RRGVMLAVDAVIAELKKQSKPVTTPEEIAQVATISANGDKEIGNIISDAMKKVGRKGVITVKDGKTLNDE
          ::  ::: :  : :  : :: : ::: ::  ::  : ::: ::  ::::::      :
ML65K   KRGIEKAVDKVTETLLKDAKEVETKEQIAATAAISA-GDQSIGDLIAEAMDKVGNEGVITVEESNTFGLQ

              211       220       230       240       250       260       270       280
                '         '         '         '         '         '         '         '
HUMP1   LEIIEGMKFDRGYISPYFINTSKGQKCEFQDAYVLLSEKKISSIQSIVPALEIANAHRKPLVIIAEDVDG
        ::  ::: :: :::: ::      :  : ::  : :       : ::  :::::: : :
ML65K   LELTEGMRFDKGYISGYFVTDAERQEAVLEEPYILLVSSKVSTVKDLLPLLEKVIQAGKSLLIIAEDVEG

              281       290       300       310       320       330       340       350
                '         '         '         '         '         '         '         '
HUMP1   EALSTLVLNRLKVGLQVVAVKAPGFGDNRKNQLKDMAIATGGAVFGEEGLTLNLEDVQPHDLGKVGEVIV
        :::::::  :          :::::::::: ::  : :::: ::  :  : ::  :::  :
ML65K   EALSTLVVNKIRGTFKSVAVKAPGFGDRRKAMLQDMAILTGAQVISEE-VGLTLENTDLSLLGKARKVVM

              351       360       370       380       390       400       410       420
                '         '         '         '         '         '         '         '
HUMP1   TKDDAMLLKGKGDKAQIEKRIQEIIEQLDVTTSEYEKEKLNERLAKLSDGVAVLKVGGTSDVEVNEKKDR
        :::      : ::  :  :   :  :  : ::: :::::: :::: : :     :: : : :
ML65K   TKDETTIVEGAGDTDAIAGRVAQIRTEIENSDSDYDREKLQERLAKLAGGVAVIKAGAATEVELKERKHR
```

Figure 3A

OIPE JC1800 OCT 28 2002 PATENT & TRADEMARK OFFICE


```
          421       430       440       450       460       470       480       490
                    '         '         '         '         '         '         '
HUMP1     VTDALNATRAAVEEGIVLGGGCALLRCIPALDSLTPANEDQKIGIEIIKRTLKIPAMTIAKNAGVEGSLI
                    ::        :::::::::  :::  ::    ::::  :         :  : :  :  :  : :  : :
ML65K     IEDAVRNAKAAVEEGIVAGGGVTLLQAAPALDKLKLTGDEAT-GANIVKVALEAPLKQIAFNSGMEPGVV
          491       500       510       520       530       540       550       560
                    '         '         '         '         '         '         '
HUMP1     VEKIMQSSSEVGYDAMAGDFVNMVEKGIIDPTKVVRTALLDAAGVASLLTTAEVVVTEIPKEEKDPGMGA
                    ::        :  :  :   :         :  ::  :  ::  ::   : : :: :: :  :     :
ML65K     AEKVRNLSVGHGLNAATGEYEDLLKAGVADPVKVTRSALQNAASIAGLFTT-EAVVADKPEKTAAPASDP
          561       570
                    '
HUMP1     MGGMGGGMGGGMF
                    :::::  :        :
ML65K     TGGMGG-MD---F

Total score = 4552, 7 breaks
  255 identities out of 540 possible matches between residues

25 random runs
Alignment score =   47.73 SD   Standard deviation =   23.86   Mean = 3413.16
```

Figure 3B

OIPE JC180
OCT 2 8 2002
PATENT & TRADEMARK OFFICE


```
                1         10        20        30        40        50        60        70
                '         '         '         '         '         '         '         '
HUMP1   MLRLPTVFRQMRPVSRVLAPHLTRAYAKDVKFGADARALMLQGVDLLADAVAVTMGPKGRTVIIEQSWGS
                :                   ::        :    :::::  ::  :::::  :    :   ::
TB65K   M-------------------------AKTIAYDEEARRGLERGLNALADAVKVTLGPKGRNVVLEKKWGA

               71        80        90       100       110       120       130       140
                '         '         '         '         '         '         '         '
HUMP1   PKVTKDGVTVAKSIDLKDKYKNIGAKLVQDVANNTNEEAGDGTTTATVLARSIAKEGFEKISKGANPVEI
        : : :::  :: : : : :  ::: ::  :  ::::::::::::::  :::      ::::
TB65K   PTITNDGVSIAKEIELEDPYEKIGAELVKEVAKKTDDVAGDGTTTATVLAQALRKEGLRNVAAGANPLGL

              141       150       160       170       180       190       200       210
                '         '         '         '         '         '         '         '
HUMP1   RRGVMLAVDAVIAELKKQSKPVTTPEEIAQVATISANGDKEIGNIISDAMKKVGRKGVITVKDGKTLNDE
          ::   ::  :  : : : : : :  ::: ::  :  :: :::  :::::      :
TB65K   KRGIEKAVEKVTETLLKGAKEVETKEQIAATAAISA-GDQSIGDLIAEAMDKVGNEGVITVEESNTFGLQ

              211       220       230       240       250       260       270       280
                '         '         '         '         '         '         '         '
HUMP1   LEIIEGMKFDRGYISPYFINTSKGQKCEFQDAYVLLSEKKISSIQSIVPALEIANAHRKPLVIIAEDVDG
        :: ::: :: :::: ::      :     : : ::   : ::      ::: ::::::: :
TB65K   LELTEGMRFDKGYISGYFVTDPERQEAVLEDPYILLVSSKVSTVKDLLPLLEKVIGAGKPLLIIAEDVEG

              281       290       300       310       320       330       340       350
                '         '         '         '         '         '         '         '
HUMP1   EALSTLVLNRLKVGLQVVAVKAPGFGDNRKNQLKDMAIATGGAVFGEEGLTLNLEDVQPHDLGKVGEVIV
        :::::::: :          :::::::::: ::  : :::: ::: :  ::  : ::      ::: :  : :
TB65K   EALSTLVVNKIRGTFKSVAVKAPGFGDRRKAMLQDMAILTGGQVISEE-VGLTLENADLSLLGKARKVVV

              351       360       370       380       390       400       410       420
                '         '         '         '         '         '         '         '
HUMP1   TKDDAMLLKGKGDKAQIEKRIQEIIEQLDVTTSEYEKEKLNERLAKLSDGVAVLKVGGTSDVEVNEKKDR
        :::      : ::  : :  :          : :  ::: :::::  :::: : :      :: :  : : :
TB65K   TKDETTIVEGAGDTDAIAGRVAQIRQEIENSDSDYDREKLQERLAKLAGGVAVIKAGAATEVELKERKHR
```

Figure 4A

OIPE JC100 OCT 28 2002 PATENT & TRADEMARK OFFICE


```
              421       430       440       450       460       470       480       490
                '         '         '         '         '         '         '         '
HUMP1    VTDALNATRAAVEEGIVLGGGCALLRCIPALDSLTPANEDQKIGIEIIKRTLKIPAMTIAKNAGVEGSLI
           ::      ::::::::: :::  ::  : :: :     :  : : :  :  :   :: : : :
TB65K    IEDAVRNAKAAVEEGIVAGGGVTLLQAAPTLDELK-LEGDEATGANIVKVALEAPLKQIAFNSGLEPGVV
              491       500       510       520       530       540       550       560
                '         '         '         '         '         '         '         '
HUMP1    VEKIMQSSSEVGYDAMAGDFVNMVEKGIIDPTKVVRTALLDAAGVASLLTTAEVVVTEIPKEEKDPGMGA
           ::      :  :  :      :  :: :: :  :: :  : :  : :: ::  :  :  ::
TB65K    AEKVRNLPAGHGLNAQTGVYEDLLAAGVADPVKVTRSALQNAASIAGLFLTTEAVVADKPEKEKASVPG-
              561       570
                '         '
HUMP1    MGGMGGGMGGGMF
           :: ::: :
TB65K    ----GGDMGGMDF

Total score = 4560, 5 breaks
  257 identities out of 540 possible matches between residues

25 random runs
Alignment score =   49.36 SD   Standard deviation =   23.23   Mean = 3413.16
```

Figure 4B

OIPE JC14/600
OCT 28 2002
PATENT & TRADEMARK OFFICE

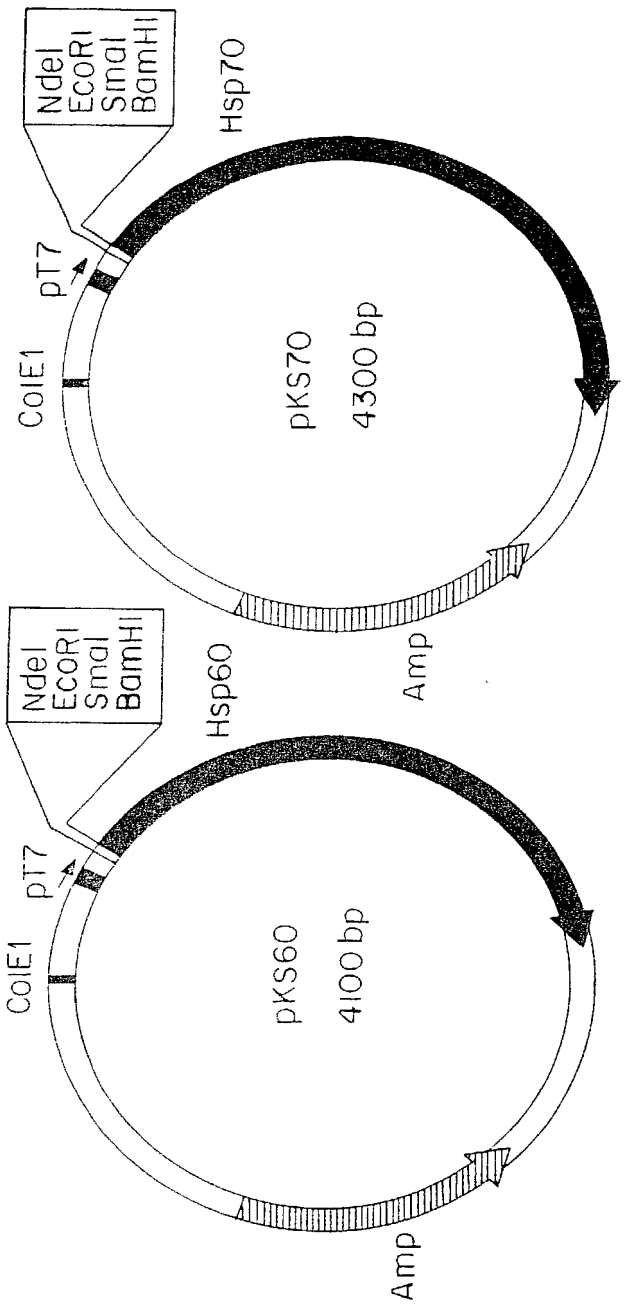

FIG. 5

OIPE JC100
OCT 28 2002
PATENT & TRADEMARK OFFICE

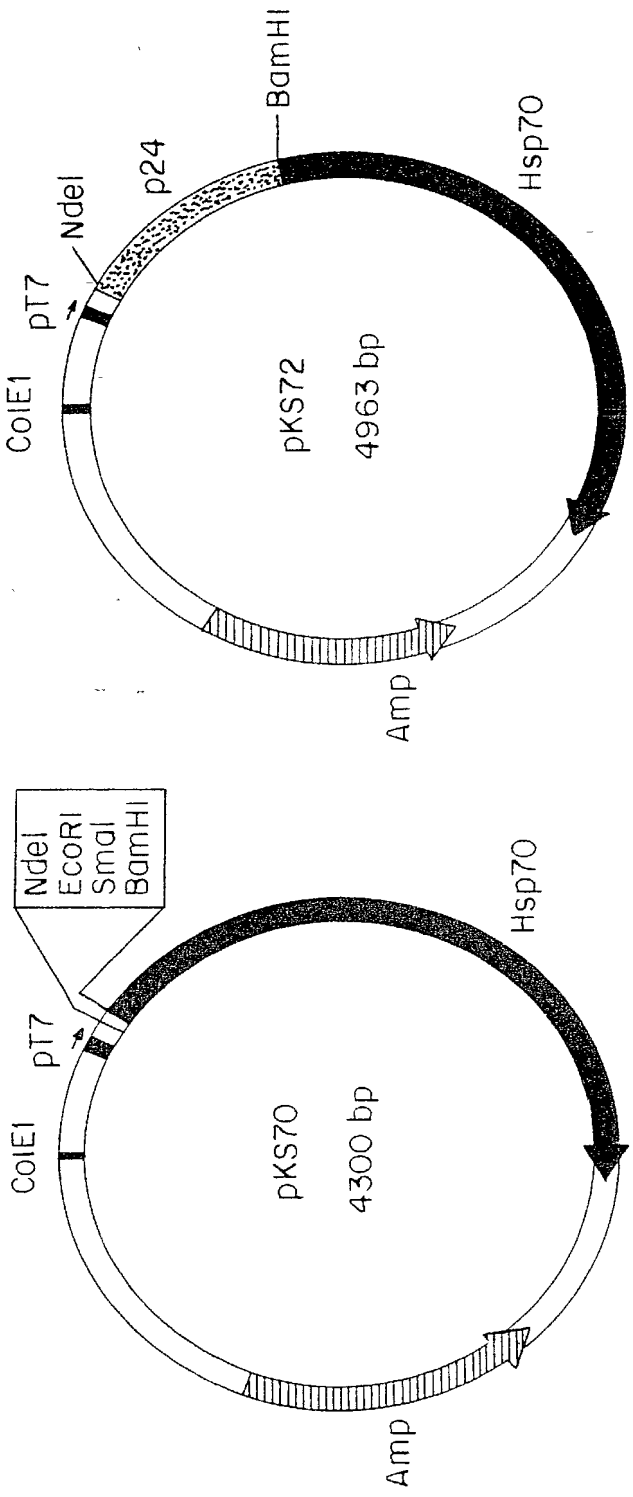

FIG. 6

OIPE JC1900 OCT 28 2002 PATENT & TRADEMARK OFFICE

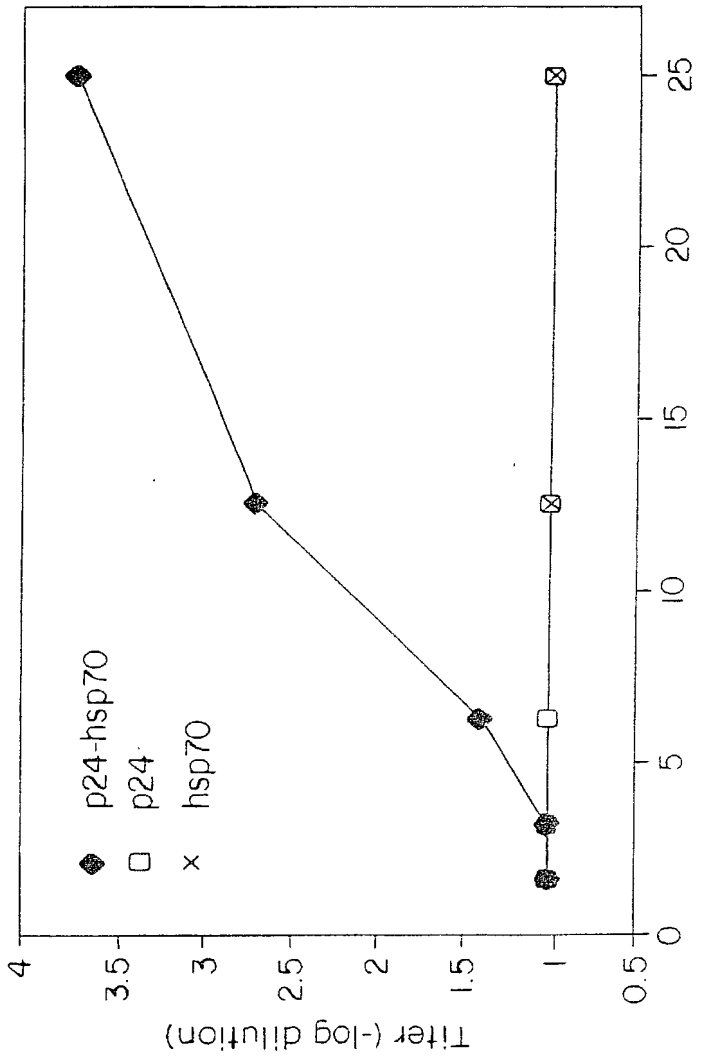

FIG. 7